SPACE TECHNOLOGY
ITS ROLE IN DISASTER MANAGEMENT TODAY

Fake news; Radicalisation in Central Asia; Ransomware & cybersecurity; Lindt Café siege; Treating Afghanistan’s victims of war; Emergency management & resilience; Artificial Intelligence; 3D printing technology; Drones & EENA; Computer modelling in large scale incidents; The impact of NIMS; Robotics for good
spaces and roads of the whole of Afghanistan

The Grenfell Tower tragedy

The Grenfell Tower fire is an indication of the fragility of the crisis management frameworks upon which we so heavily rely, according to David Rubens.

Ransomware: The trap within the trap

Very few of us know what an attacker wants from our computer with malware, and that’s the real problem, writes Todd Rosenblum.

Getting to grips with cyber security

There are fairly straightforward things your business can do to help avoid being a victim of ransomware or other cyber crime, says Gary Faron.

Emergency management

What does resilience mean in the UK?

Sarah Poines demonstrates that the UK stakeholders with the aim of identifying the UK-specificity of resilience as a ‘culture’ in an ever-changing world.

Organisational resilience

Anticipation, assessment, prevention, preparation, response and recovery – these are the vital areas that any organisation should be looking at when considering its resilience, says Roger Gomm.

Alternative community crisis paradigm

Dennis Davis suggests that resilience should become more focused upon the citizen, with matters of vulnerability and consequence being considered at the planning stage.

Violence in the workplace

Richard Diston examines workplace violence, saying that it can often be an organisational crisis. How to eliminate violent conduct and ensure a safe workplace for all employees? The starting point is leadership.

Emergency management on islands

How do you undertake disaster management on one of the world’s remotest islands? Ian Johnson describes the particular challenges of the island of St Helena in the South Atlantic.

The threat of orbital debris

Humanity relies on space technology, but this could become a trap if the issue of space junk is not addressed. Emily Hough explains how DejaLords helps to make space debris a safe place.

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3D printing p76

R&D/Technology

3D printing in healthcare

3D printing has become a versatile and progressively cost-effective technology, permitting a variety of fields, say our R&D writers, led by Ian Portelli.

Drones for emergencies

Piotr Kowalski of wemo says that, in a few years, having drones available within a country’s safety emergency response organisation will be as routine as having a telephone line.

Computer modelling in large incidents

Friedrich Steinhaus describes how modelling of people, vehicles, weapons, explosions, and the release of toxic materials can help first responders.

Space technology

We are the Space Race

Lawrence Marlow says that the IGS Space Place still pays dividends today, as we rely on information form space for services to keep us safe, secure and resilient.

A view from above: Earth observation

Dalia Kirschbaum and colleagues outline how NASA, working with partners, is helping to harness the scope and range of Earth observations for disaster risk reduction and response teams on the ground.

Space and the Sendai Framework

Space-based technology and Earth observation help in disaster risk reduction, says Josephine Pest, Juan-Carlos Villagran and Luc St Pierre. But more effort is needed to make this data usable by developing countries.

Governance and ICT solutions

Davide Miozzo and Davide Poletto describe some projects that aim to embed ICT and space technology in the daily work of first responders.

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Nicholas B Hambridge, Arnold M Howitt, and David W Giles gauge the diffusion of the National Incident Management System across the United States

As a consequence of the September 11, 2001, terrorist attacks, the US Homeland Security Act of 2002 mandated the creation of the National Incident Management System (NIMS) to be the standard method for managing emergency response operations at all levels of government regardless of incident type, size, or complexity.

The underlying logic of developing and deploying an emergency response system like NIMS/Incident Command System (ICS) rests on the need for co-ordination of resources, particularly in major events. Ideally, a robust emergency response, especially when involving multiple organisations and jurisdictions, requires effective collaboration so response tasks can be carried out with necessary urgency, maximum feasible effectiveness and cost-effectiveness, with minimal duplication of effort or unmet response needs.

The Congressional mandate for NIMS, however, did not in itself ensure success in diffusing NIMS practices broadly, let alone universally. The US has more than 89,000 units of subnational government – states, counties, municipalities, school districts, and special districts. To achieve the potential benefits of a standardised emergency management system that fosters effective co-ordination, NIMS has to be diffused across levels of government and jurisdictions, be accepted by diverse professions, take root in hundreds of thousands of individual agencies and organisations, and spread through the public, private, and non-profit sectors.

Unlike many other kinds of innovation, responsibility for NIMS cannot be assigned to a special organisational unit in each of these entities; rather it requires full engagement by all agency personnel at the operating level (see Arnold M Howitt and Herman B Leonard, *A Command System for all Agencies* (CR/ 1:2, 2005)). The broad sweep and depth of the NIMS requirement entails a massive implementation process – one that is still going on 15 years after the Congressional mandate.

The ICS is fundamental to NIMS as a framework for managing operations at or near the scene of an emergency. It provides responders with a way to co-ordinate emergency efforts through a common, flexible, and scalable command structure that organises response under an incident commander and a sub-organisation of four major sections: Operations; planning; logistics; and finance/administration.

As the scale of response expands, responders may organise sub-units of the four core sections, either by functional specialisation (e.g. fire suppression operations group and emergency medical operations group) or by geographic sector, called divisions. See Figure 1 for depiction of a basic ICS structure and an expanded structure for complex events.

What is the impact of the NIMS mandate?

To ensure that ICS is used as universally as possible, the US federal government issued NIMS implementation requirements starting in the financial year 2005, which gave jurisdictions two years to comply with the full array of NIMS implementation standards. NIMS compliance was made a precondition for any agency or organisation to receive homeland security preparedness funding – a potentially powerful incentive for adopting and implementing the system.

However, the impact of actually withholding funds from jurisdictions that did not comply with the NIMS mandate proved too strong or even counter-productive to those developing the regulations for NIMS compliance. Withholding funds would have removed resources that those entities needed to improve emergency response systems, and that would undoubtedly have caused political reaction by local, state, and federal officeholders representing those jurisdictions. Therefore, states and sub-state jurisdictions, when applying for homeland security grants, have only been asked to self-certify, with minimal documentation, that they are NIMS compliant.

Although it has only lightly enforced NIMS compliance, FEMA has fostered NIMS implementation by issuing guidance documents to all levels of government, as well as to private industry and non-profit organisations. In addition, FEMA has created NIMS training resources for specific disciplines, including transportation, healthcare, hospitals, higher education, schools, public works, public health, and volunteer organisations. FEMA’s attention to the variation among emergency response groups has been important to the implementation process because it makes a seemingly monolithic system adaptable to the variety of cultures, missions, needs, and capabilities across emergency response disciplines.

Understanding the differences among professions that participate in emergency response, particularly the contrast between first responders and other disciplines, is critical to evaluating the success of NIMS implementation thus far and improving it’s moving forward.

The term ‘first responder’ in US legislation means: “Federal, state, and local governmental and non governmental emergency public safety, fire, law enforcement, emergency response, emergency medical (including hospital emergency facilities)....” But other public and
non-public agencies may become crucial actors in emergencies. This can be illustrated by the imagery of concentric circles where the inner circle is occupied by agencies whose principal mission is emergency management and the outer circles contain all the other organisations with potential involvement in emergency-related activities but which do not consider emergency management their core mission (Figure 2 opposite page).

Research has consistently identified several factors as having an impact on NIMS implementation – and on emergency preparedness in general. But these factors may work less effectively for organisations in the outer circles than for first responders.

The first factor is compliance requirements and enforcement. Federal preparedness funding for states and localities was made contingent upon NIMS compliance, although FEMA has required only state-level self-certification. While federal grant funding could be a strong incentive to compel NIMS compliance for first response organisations, many second and third circle responder groups – for example, private industry and NGOs – do not rely on this funding.

Comprehension of risk is another factor. An organisation’s or individual’s level of perceived risk of experiencing a severe emergency influences their preparedness. When the level of perceived risk is low, the chances of a person or group doing something to prepare for or mitigate that risk are also low. Conversely, when persons or groups believe that a risk is likely to affect them, they are more likely to take action to prevent or prepare for it. Therefore, helping organisations in the outer circles to understand their risks is a primary step. The federal government has begun to put greater emphasis on risk assessments as part of the National Preparedness Goal and National Preparedness System.

Commitment of resources is a critical element. For second and third circle organisations, diverting resources (time, money, and staff) away from their own mission-critical activities and into emergency management programmes has proved problematic, especially when budgets are shrinking or they have limited financial and administrative resources. The commitment of executive leadership within these organisations to fund and support emergency planning and preparedness initiatives is therefore very important for NIMS implementation.

Furthermore, outer circle organisations may perceive NIMS/ICS as overly prescriptive and rigid and hence unsuitable for those that do not primarily function as command and control hierarchies. Some have argued for flexibility in customising NIMS in ways relevant to each individual organisation’s needs, structure, and culture, while maintaining sufficient fidelity to the basic system so that collaboration with other organisations remains feasible.

Collaboration with other responders is another important factor. A number of observers cite the benefits of pre-incident collaboration between emergency response groups, whether in planning, training, or exercising. Second and third circle groups that are able to maintain close linkages to first response agencies are more likely to be successful in emergency planning and NIMS implementation efforts.

And finally, we have the issue of consistency of use. Inefficient utilisation of NIMS is another obstacle to full implementation, particularly by outer circle responders. While first responders usually have opportunities to use NIMS/ICS as part of their normal work activities, second and third circle responders encounter emergency situations much less frequently and are therefore more likely to be uncomfortable using NIMS when they do respond to emergencies.

To what extent therefore is NIMS being implemented effectively in second and third circle organisations? Part 2 will explore that question in the context of transit and highway agencies.

A longer version of the research reported here appears in Co-ordination in Crises: Implementation of the National Incident Management System by Surface Transportation Agencies, Homeland Security Affairs, New England University Transportation Center with funds from the US Department of Transportation’s University Transportation Centers programme. Additional support was provided by the Ash Center for Democratic Governance and Innovation, the Taubman Center for State and Local Government, and the Program on Crisis Leadership – all of the John F Kennedy School of Government at Harvard University.

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Figure 1 (right): Basic ICS structure and expanded ICS structure for complex events; Figure 2 (left): Other crucial actors in emergencies

Adapted from FEMA ICS for Single Resources and Initial Action Incidents: emilms.fema.gov/IS200b/ICS01summary.html#ICS01summary.htm

Figure 2 (opposite page): Imagery of concentric circles where the inner circle is occupied by agencies whose principal mission is emergency management and the outer circles contain all the other organisations with potential involvement in emergency-related activities but which do not consider emergency management their core mission.
align the hostage-taker’s expectations. Misinterpretation of the restrictions put to make concessions to terrorists, imposed under the National Counter Terrorism plan, may have contributed to this decision.

Monis’s demand seeking an on air debate could have been explored through asking him to provide a written statement as to his purpose and motivation behind the incident, allowing him to express himself, while at the same time permitting negotiators to understand what had brought him to this point. Such understanding would have made negotiators better placed to enter into productive dialogue. The refusal only increased the hostages’ frustration and sense of abandonment. The hostage-taker’s demand for an flag was quite rightly met with refusal, but negotiators did not explore why he wanted the flag, nor did they explain why it would not be provided. This was counterproductive and again increased the anguish among the hostages.

Moving police and parked vehicles out of Phillip Street in response to demands by Monis was reasonable and appropriate, although it should have been used as a positive police action to pursue some reciprocation. His demand for the lights in Martin Place to be extinguished appeared to have been mismanaged by both the negotiators and command. This could have been granted and might have provided yet another opportunity to engage in direct dialogue with Monis. Instead, the prolonged failure not only agitated his anger, but also exacerbated the sense of frustration experienced by the hostages.

To measure the effectiveness of any strategy you must be able to measure your progress towards your ultimate goal. Unfortunately, no progress towards a negotiated settlement of the siege was made at any stage. Negotiators failed to undertake robust evaluation and assessment of where they were in the negotiations and what they had not achieved in line with their strategy, nor was there a system or process in place that allowed them to do so. This affected tactical negotiator advice to the various levels of command, which saw no change to the ‘contain and negotiate’ strategy. While not definitive, progress in negotiations may be measured through:
- Emotional outbursts are declining and conversations are getting longer;
- Hostages are released;
- Weapons are surrendered;
- Absence of physical injury to hostages;
- The incident is static; and
- A routine has been established.

The role of a consultant psychiatrist or psychologist in the response to a hostage siege is beneficial and can provide an excellent clinical insight for negotiators on how to communicate effectively when dealing with a hostage-taker who is suffering from a personality disorder. The consultant can also assess the hostages’ behaviour, which helps advise on how best to reassure them during their captivity.

A psychiatrist or psychologist may also be used to monitor the negotiation team to assess how they are managing under the high stress of an incident, and to offer psychological support where required. Their advice, while invaluable, must be taken in the context of the cultural, religious and situational factors that give influence to a hostage-taker’s behaviour and actions. It is from this, based on training and experience, that negotiators make informed judgments about their strategy, its effectiveness and to identify ways forward in dialogue, especially if a stalemate has been reached.

In the case the consultant psychiatrist was permitted to give advice about negotiation strategy and tactics, but made erroneous and unrealistic assessments about what was occurring in the stronghold, gave ambiguous advice about the nature of Monis’s behaviour, and was allowed to go beyond his area of expertise and give advice about Islamic terrorism. This, combined with other factors, led to an underestimation of Monis’s capability and the danger he posed to the hostages.

In addition, a total of eight calls by hostages to a number they had been told would connect them with a negotiator went unanswered – four around 20:00hrs and another four between 23:30hrs and 01:00hrs. An unknown number of calls were also diverted to other telephones within the Police Forward Command Post.

Missed calls

Missing these calls highlights a significant failure in a basic component of siege management. It was likely that the calls between 23:30hrs and 01:00hrs were not answered because all the negotiators were involved in a handover briefing in a separate room.

Handovers between teams on long running sieges are commonplace and must be handled with care and diligence to continue to provide open communication and ensure a smooth transition to a fresh team.

Negotiators had not received adequate training in dealing with terrorists. The training of negotiators focuses on dealing with the high incidence of domestic high-risk situations, but did not adequately equip them to engage effectively with terrorists in a siege.

Negotiators should have at least a basic understanding of terrorist negotiations and a cadre should be developed that mirrors the counter terrorism command to ensure capability and capacity across all of the tactical options.

There was no policy requiring commanders or negotiators to record negotiation positions and tactics, the demands made by a hostage-taker, or any progress or lack of it in moving a high-risk situation towards resolution.

Recording negotiators’ observations on the stage and progress of negotiations allows them to make recommendations in further negotiation tactics, or ultimately declare to commanders that negotiations are not working to allow other tactical options.

There is a train of thought in legal circles that if it something is not recorded then it did not happen. Recording decisions, tactical advice, progress updates and negotiator dialogue can be viewed as hard work, but advancements in technology allow it all to be captured with ease.

Thankfully incidents of this nature are rare but, when they do occur, they present a significant danger to innocent people caught up as hostages and pose complex challenges to the agencies that must be prepared to respond to such events.

History has taught us that successful resolution by police from law enforcement agencies or military requires exceptional training, planning and execution.

Globally, negotiators form a small community that willingly shares the challenges of the incidents so others can learn from their experience; they will no doubt also learn the lessons from this incident. 

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